REMARKS

Reconsideration and withdrawal of the examiner's rejections under 35 USC § 103 is respectfully requested in view of the above amendments and the following remarks. The applicant would like to thank the examiner for his time and kind cooperation in this matter.

35 USC § 103

The examiner has rejected claims 1 under 35 U.S.C. 103(a) as being unpatentable over Evani, et al. (US 4,156,775). The examiner asserts the following:

Evani, et al., teaches polymers comprising azetidinyl groups and secondary amines (column 4, lines 40-65; column 1, lines 46-65). Evani, et al., teaches adding 0.1-6% weight percent based on the weight of the suspension of the polymer to an aqueous suspension of cellulosic fibers (column 7, lines 10-25). Evani, et al., further teaches polymer compositions comprising additives which may be textile compatible carriers (column 7, lines 50-68).

Evani, et al., does not teach the preferred polymers and weight percentages in a single example.

The examiner further asserts that it would have been obvious to one of ordinary skill in the art to pick the appropriate substituents to arrive at the instantly claimed structure because Evani, et al., teaches azetidinyl rings and secondary amine substituents as useful in providing improved wet strength fibrous textile materials. In response, applicants have amended claim 1 by adding the limitations of claim 2 to clearly distinguish the claims over Evani, et al.

Evani et al. discloses cationic polyethers and their use in the manufacture of paper and other fibrous materials (see column 1, lines 7 to 9). Evani et al. teaches that the cationic polyethers may contain an azetidinium ring and a secondary amine (see column 2, lines 13 to 66, column 4, line 52 to column 5, line 2 and Example 4). There is nothing in Evani et al. to suggest providing a polymer that comprises an amino-acrylate and/or an amino-alkacrylate monomer as presently claimed.

The examiner has rejected claims 1, 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over Parker (WO 01/25386). The examiner asserts the following:

Parker teaches fabric care compositions comprising reactive cationic polymers, specifically secondary amine based azetidinium resins, and textile compatible carriers (page 4, lines 15-21; page 5, lines 10-28; page 6, 17-19) as claimed in claims 1 and 3. Parker further teaches the resins be applied to 0.0005-5% by weight on the fabric based on the weight of fabric (page 7, lines 5-11), as claimed in claim 4.

Parker does not teach all the preferred embodiments in a single example.

The examiner further asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the portion of the prior art's polymer concentration range which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results. Applicants respectfully traverse this rejection.

Parker discloses a fabric care composition that comprises at least one reactive cationic polymer, at least one reactive anionic polymer and at least one textile compatible carrier (see page 4, lines 16 to 27). The reactive cationic polymers may be amine or amide-epichlorohydrin resins, which may include one or more functional groups capable of forming azetidinium groups and/or azetidinium functional groups (see page 5, lines 13 to 28). There is nothing in Parker to suggest providing a polymer that comprises an amino-acrylate and/or an amino-alkacrylate monomer as presently claimed.

The examiner has rejected claims 1, 2 and 5-11 under 35 U.S.C. 103(a) as being unpatentable over Swarup, et al. (WO 93/13142). The examiner asserts the following:

Swarup, et al., teaches polymers such as acrylics modified by azetidinol containing materials (page 2, lines 28-30), specifically polymers comprising monomer mixtures of tertiary-butylaminoethyl methacrylate and ethyl methacrylate (page 3, lines 32-35; page 4, lines 11 and 14), as claimed in claims 1, 2 and 5-7. See example II, page 12. Swarup, et al., further teaches the equivalence of the monomers taught in example II and tertiary-butylaminoethyl methacrylate and tehyl methacrylate (page 3, lines 32-35; page 4, lines 11 and 14).

Swarup, et al., does not teach all the preferred embodiments in a single example.

The examiner further asserts that it would have been obvious to one of ordinary skill in the art to substitute the tertiary-butylaminoethyl methacrylate and ethyl methacrylate monomers into the methods taught in example II of Swarup, et al., because Swarup, et al., teaches the equivalence of these monomers as useful agents in providing improved wet strength fibrous textile materials.

Regarding the claim limitations of claims 8-11, these limitations do not need to be met because the non-amino acrylate polymers and/or non-amino alkacrylate monomers are optional components in claim 2 upon which these claims depend. Applicants respectfully traverse this rejection.

The Examiner seems to consider that Swarup et al. must disclose polymers that contain an azetidinium group because it refers (for example in Example II) to "azetidinol modified acrylic". Applicants respectfully submit that this phrase is not intended to nor does it mean a polymer that comprises azetidinol groups. Instead, it is intended to mean a polymer prepared by reaction between an azetidinol type monomer and an acrylic type monomer. This is evident from page 2, lines 14 to 17, where it is stated that the invention relates to the ungelled reaction product of a carboxylic acid group containing polymeric material and an azetidinol containing material.

Furthermore, it is clear from the teaching on Swarup et al. as a whole that the intention is to incorporate an aminoester group into an acrylic polymer, not to incorporate an azetidinyl group (see page 2, lines 20 to 27). Swarup et al. teaches that it is advantageous to use azetidinol materials to do this because they are not as hazardous to handle as the more commonly used azirdines. Thus, it is clear that the term "azetidinol modified acrylic" is meant to refer to the use of azetidinol materials as reagents only and not as a polymeric reaction product.

Thus, Swarup et al. describes ungelled materials that are the product of the reaction between two reagents. One reagent is a polymer that contains a carboxylic acid group and the other reagent is a material that contains a single azetidinol group (see page 2, lines 14 to 17

and page 3, lines 10 to 12). Swarup et al. teaches that the polymeric reagent that contains a carboxylic acid group can be selected from a variety of materials that would be known to a person skilled in the art and including, for example, vinyl addition polymers (see page 3, lines 12 to 21). Swarup et al. lists a number of suitable vinyl monomers, which list includes the amino-containing monomer tertiary-butylaminoethyl methacrylate, as the Examiner has pointed out (see page 3, line 32 to page 4, line 21). Swarup et al. provides a generic formula for preferred azetidinol-containing reagents and teaches that N-cyclohexyl azetidinol is preferred (see page 6, lines 1 to 12, 31 and 32). Importantly, the azetidinol-containing reagents are not polymers.

The azetidinol-containing reagent is reacted with the polymeric reagent. The reaction occurs between the acid group of the polymeric reagent and the azetidinol group of the azetidinol-containing reagent. This reaction results in the opening of the azetidinyl ring and the formation of a covalent (-O-C-) bond. This is clear from the text at page 7, lines 23 to 32 of Swarup et al. The polymer that is produced in this reaction, therefore, does not include an azetidinium group. Moreover, the polymer produced is unreactive and has no affinity for cellulose.

It is further clear that the aforementioned polymer/reaction product does include an azetidinium group from the text at page 8, lines 21 to 23, where it is stated that the polymer/reaction product contains an active hydrogen functional material, i.e. a hydroxyl aminoalkyl ester. Such a functional group can only be present when the azetidinyl ring has opened.

Thus, the only materials disclosed in Swarup et al. that include an azetidinium group are the azetidinol-containing reagents. These reagents are not polymeric and do not contain a secondary amine group or either an amino-acrylate or an amino-alkacrylate group. The teaching in Swarup et al. would not, therefore, have led the skilled person to provide a functionalised polymer as defined in amended claim 1.

Furthermore, there certainly is nothing in Swarup et al. to teach, or even suggest, that such functionalised polymers would surprisingly reduce problems associated with stain fixing and dye adsorption (see above and the Examples of the present application).

Applicants have found the presence of secondary amine groups provided surprising advantages in textile treatment. When the secondary amine groups undergo cross-linking reactions with the azetidinium groups, no quaternary groups are formed and so the cross-linked polymer formed is not charged. The absence of a charge was found to reduce problems associated with stain fixing and dye adsorption (see page 5, lines 6 to 12 of the present application). Furthermore, the synthesis of the polymer of amended claim 1 from acrylate-functional monomers provides surprising advantages in terms of allowing further functionality to be incorporated into the polymer (see page 5, lines 13 to 16 of the present application).

CONCLUSION

In summary, Claim 1 has been amended and claim 2 has been cancelled as being redundant.

In light of the above remarks, applicants submit that the claims now pending in the present application are in condition for allowance. Reconsideration and allowance of the application is respectfully requested. The examiner is invited to contact the undersigned if there are any questions concerning the case.

Respectfully submitted,

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